

WHAT IS CLAIMED IS:

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- 5 1. A semiconductor device comprising:  
a first region where first transistors each having a first gate oxide  
film of a first thickness is formed;  
a second region where second transistors each having a second  
gate oxide film of a second thickness are formed;  
trench isolation regions formed selectively within said first and  
second regions;  
a dummy region having a plurality of dummy trench isolation  
regions located between said first and said second regions; and  
10 a positioning mark which is formed between said plurality of  
dummy trench isolation regions and which is used for positioning a  
mask film.
- 5 2. A semiconductor device according to Claim 1, wherein said  
semiconductor device comprises a memory cell region in which memory  
cell transistors are formed and a peripheral circuit region in which a  
peripheral circuit for controlling the operation of said memory cell  
transistors is formed and wherein said first region includes said memory  
cell region and said second region includes said peripheral circuit region.
3. A semiconductor device according to Claim 2, wherein said  
semiconductor device includes a non-volatile semiconductor memory  
device.
4. A semiconductor device according to Claim 1, wherein said  
positioning mark includes a trench part formed so as to connect said  
dummy trench isolation regions.
5. A production method for a semiconductor device comprising:  
the step of selectively forming trench isolation regions within a  
first and a second region of a semiconductor substrate;

- 5 the step of forming an anti-oxidation film so as to cover said trench isolation regions;
- the step of removing said anti-oxidation film located in said first region so that said anti-oxidation film remains in said second region;
- 10 the step of forming first gates of first transistors via first gate oxide film in said first region under a condition where said second region is covered with said anti-oxidation film;
- the step of removing said anti-oxidation film located in said second region; and
- the step of forming second gates of second transistors via second gate oxide film in said second region.

5 6. A production method of a semiconductor device according to Claim 5, wherein the step of forming said anti-oxidation film includes the step of forming an oxide film on said semiconductor substrate and the step of forming said anti-oxidation film on said oxide film and further comprising the step of removing said oxide film by carrying out wet etching using said anti-oxidation film as a mask after removing said anti-oxidation film located in said first region.

5 7. A production method for a semiconductor device according to Claim 5, wherein the step of forming said anti-oxidation film includes the step of forming an oxide film on said semiconductor substrate and the step of forming said anti-oxidation film on said oxide film so that the thickness of said anti-oxidation film becomes lesser than the thickness of said oxide film.

5 8. A production method for a semiconductor device according to Claim 5, wherein the step of removing said anti-oxidation film located in said first region includes the step of forming a mask film having an opening above said first region on said anti-oxidation film and the step of selectively removing said anti-oxidation film using said mask film, and further comprising the step of carrying out a channel doping in the

first region of said semiconductor substrate using said mask film.

9. A production method for a semiconductor device according to Claim 5, wherein a border region having a dummy gate between said first and said second regions is provided;

5 the step of removing said anti-oxidation film located in said first region includes the step of forming a first mask film reaching said border region on said anti-oxidation film and the step of selectively removing said anti-oxidation film using said first mask film;

10 the step of removing said anti-oxidation film located in said second region includes the step of forming a second mask film on said first gates so as to be overlapped with said anti-oxidation film and the step of selectively removing said anti-oxidation film using said second mask film; and

the step of forming said second gates includes the step of forming said dummy gate so as to cover said anti-oxidation film.

10. A production method for a semiconductor device according to Claim 5, wherein said semiconductor device comprises a memory cell region in which memory cell transistors are formed and a peripheral circuit region in which a peripheral circuit for controlling the operation of said memory cell transistors is formed and wherein said first region includes said memory cell region and said second region includes said peripheral circuit region.

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